

REMARKS

I. Introduction

In response to the Office Action dated June 9, 2009, Applicants have incorporated the limitations of claim 2 into claim 1. Claim 2 has been cancelled, without prejudice. No new matter has been added.

For the reasons set forth below, Applicants respectfully submit that all pending claims are patentable over the cited prior art references.

II. The Rejection Of Claims 1-10 Under 35 U.S.C. § 103

Claims 1, 3-6 and 8-10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al. (US 2005/0008936) in view of Yano (USP No. 6,235,428); and claims 2 and 7 as being unpatentable over Takahashi in view of Yano and further in view of Tanigawa (US 2002/0024041). As the limitations of claim 2 have been incorporated into claim 1, Applicants will refer to amended independent claim 1 when discussing the rejection of claim 2. Applicants respectfully submit that Takahashi, Yano, and Tanigawa fail to render the pending claims obvious for at least the following reasons.

With regard to the present disclosure, amended independent claim 1 recites, in part, an alkaline battery comprising a positive electrode material mixture containing electrolytic manganese dioxide and nickel oxyhydroxide. The nickel oxyhydroxide comprises a crystal in which at least Mg is dissolved, wherein the amount of Mg is 0.1 to 7 mol% relative to the total amount of Ni and Mg contained in said nickel oxyhydroxide.

Application No.: 10/588,036

One feature of independent claim 1 is that the amount of magnesium dissolved in the nickel oxyhydroxide crystal is from 0.1 to 7 mol% relative to the total amount of Ni and Mg in the nickel oxyhydroxide.

It is admitted in the Office Action that Takahashi modified by Yano fails to disclose the amount of Mg in the battery. However, it is alleged that Tanigawa teaches dissolving 3 wt% of Mg in 100 parts by wt nickel oxyhydroxide (see, paragraph [0085] of Tanigawa) and accordingly, the combination of Takahashi, Yano and Tanigawa renders amended independent claim 1 obvious. Applicants respectfully disagree.

As is recited in paragraph [0085], Tanigawa teaches 3 wt% of Mg in 100 parts by weight nickel hydroxide. As a result, a 100 g solution of nickel hydroxide would contain 3 g Mg and 97 g nickel hydroxide. As the molecular weight of Mg is 24.3, 3 g of Mg would be 0.12 mol Mg. Further, the molecular weight of nickel hydroxide is 92.69 g/mol (Ni: 58.69 + 2 O: 32 + 2 H: 2 = 92.69). Accordingly, the grams of nickel in 97 g of nickel hydroxide is $(58.69/92.69) \times 97\text{g}$, or 61.42 g, and accordingly, there are $61.42/58.69$, or 1.046 mol of nickel. Further, even though the nickel hydroxide is oxidized to nickel oxyhydroxide, the molar ratio of Ni to Mg remains unchanged so there is still 1.046 mol Ni in the nickel oxyhydroxide. Combining the above calculations, the amount of Mg relative to the total amount of Mg and Ni contained in the nickel oxyhydroxide is $0.12/(0.12 + 1.046)$ or 10.3 mol%. As this is outside the claimed range of 0.1 to 7 mol% as recited in amended independent claim 1, it is clear that the combination of Takahashi, Yano and Tanigawa fails to teach or suggest all of the limitations of amended independent claim 1.

Moreover, this difference is significant. As is shown in Tables 4 and 5 of the present disclosure, adjusting the Mg content to 0.1 to 7 mol% results in improvements in 1W continuous

discharge performance and 1A pulse discharge performance. However, as can be seen in battery M8, using 10 mol% of Mg results in a decrease in discharge time in 1W continuous discharge and 1A pulse discharge.

Therefore, as is well known, in order to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. As Takahashi, Yano, and Tanigawa do not disclose an alkaline battery comprising a positive electrode material mixture containing electrolytic manganese dioxide and nickel oxyhydroxide, wherein the nickel oxyhydroxide comprises a crystal in which at least Mg is dissolved, and the amount of Mg is 0.1 to 7 mol% relative to the total amount of Ni and Mg contained in said nickel oxyhydroxide, it is apparent that Takahashi, Yano, and Tanigawa fail to render amended claim 1 or any dependent claims thereon obvious. Accordingly, the Applicants respectfully request that the § 103 rejection be withdrawn.

III. All Dependent Claims Are Allowable Because The Independent Claim From Which They Depend Is Allowable

Under Federal Circuit guidelines, a dependent claim is nonobvious if the independent claim upon which it depends is allowable because all the limitations of the independent claim are contained in the dependent claims, *Hartness International Inc. v. Simplimatic Engineering Co.*, 819 F.2d at 1100, 1108 (Fed. Cir. 1987). Accordingly, as amended claim 1 is patentable for the reasons set forth above, it is respectfully submitted that all pending dependent claims are also in condition for allowance.

IV. Conclusion

Having responded to all open issues set forth in the Office Action, it is respectfully submitted that all claims are in condition for allowance.

Application No.: 10/588,036

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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